UNITED STATES PATENT AND TRADEMARK OFFICE

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BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD
SEVENTH FLOOR
LOS ANGELES, CA 90025-1030

EXAMINER
LI, AIMEE J

ART UNIT	PAPER NUMBER
2183	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/809,957	GROCHOWSKI, EDWARD T.
	Examiner	Art Unit
	Aimee J. Li	2183

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>28 August 2006</u>.

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-43</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-43</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>28 August 2006</u> is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail. Date _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1.   Claims 1-43 have been considered. Claim 34 has been amended as per Applicant's

request.

Papers Submitted

2.   It is hereby acknowledged that the following papers have been received and placed of

record in the file: Amendment as filed 28 August 2006.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.   Claims 1-12, 15-22, and 36-43 are rejected under 35 U.S.C. 102(b) as being taught by

Dirk Grunwald, Artur Klauser, Srilatha Manne, and Andrew Pleszkun's "Confidence Estimation

for Speculation Control" IEEE ©1998 (herein referred to as Grunwald).

5.   Referring to claim 1, Grunwald has taught an apparatus, comprising:

     a.   A first circuit to store a global confidence history (Grunwald Section Abstract;

        Section 1, paragraphs 2-3; Section 3, paragraphs 2 and 4-5; Section 3.2.1,

        paragraph 1; Section 3.3; Section 3.3.1, paragraph 1; and Figure 2);

     b.   A second circuit to store a global prediction value history (Grunwald Section 3.1,

        paragraphs 1 and 4; Section 3.3; Section, 3.3.1, paragraphs 1 and 5; and Figure 2);

     c.   A first index function to produce a first index signal from said global confidence

        history (Grunwald Section 3, paragraphs 2 and 4-5; Section 3.1, paragraphs 1 and

4; Section 3.2.1, paragraph 1; Section 3.3; Section 3.3.1, paragraphs 1 and 5; and

Figure 2); and

d.   A first pattern history table to retrieve a value responsive to said first index signal

(Grunwald Section Abstract; Section 1, paragraphs 2-3; Section 3, paragraphs 2

and 4-5; Section 3.1, paragraphs 1 and 4; Section 3.2.1, paragraph 1; Section 3.3;

Section 3.3.1, paragraphs 1 and 5; and Figure 2).

6.   Referring to claims 15 and 36, taking claim 15 as exemplary, Grunwald has taught a

method, comprising:

a.   Creating a first index using a global confidence history (Grunwald Section

Abstract; Section 1, paragraphs 2-3; Section 3, paragraphs 2 and 4-5; Section

3.2.1, paragraph 1; Section 3.3; Section 3.3.1, paragraph 1; and Figure 2); and

b.   Applying said first index to a pattern history table to retrieve a value (Grunwald

Section Abstract; Section 1, paragraphs 2-3; Section 3, paragraphs 2 and 4-5;

Section 3.1, paragraphs 1 and 4; Section 3.2.1, paragraph 1; Section 3.3; Section

3.3.1, paragraphs 1 and 5; and Figure 2).

7.   Claim 36 has similar limitations to claim 15 and is rejected for similar reasons.

8.   Referring to claims 2, 16, and 37, taking claim 2 as exemplary, Grunwald has taught the

apparatus of claim 1, wherein said first index function to use an instruction pointer signal

(Grunwald Section Abstract; Section 1, paragraphs 2-3; Section 3, paragraphs 2 and 4-5; Section

3.1, paragraphs 1 and 4; Section 3.2.1, paragraph 1; Section 3.3; Section 3.3.1, paragraphs 1 and

5; and Figure 2). Claims 16 and 23 have similar limitations to claim 2 and are rejected for the

same reasons.

9.   Referring to claims 3, 17, and 38, Grunwald has taught, taking claim 3 as exemplary, the

apparatus of claim 2, wherein said first index function to use said global prediction value history

(Grunwald Section Abstract; Section 1, paragraphs 2-3; Section 3, paragraphs 2 and 4-5; Section

3.1, paragraphs 1 and 4; Section 3.2.1, paragraph 1; Section 3.3; Section 3.3.1, paragraphs 1 and

5; and Figure 2). Claims 17 and 38 have similar limitations to claim 3 and are rejected for the

same reasons.

10.   Referring to claims 4, 18, and 39, Grunwald has taught, taking claim 4 as exemplary, the

apparatus of claim 1, wherein said first pattern history table to store a confidence count

(Grunwald Section Abstract; Section 1, paragraphs 2-3; Section 3, paragraphs 2 and 4-5; Section

3.1, paragraphs 1 and 4; Section 3.2.1, paragraph 1; Section 3.3; Section 3.3.1, paragraphs 1 and

5; and Figure 2). Claims 18 and 39 have similar limitations to claim 4 and are rejected for the

same reasons.

11.   Referring to claim 5, Grunwald has taught, taking claim 5 as exemplary, the apparatus of

claim 4, wherein said confidence count to increment subsequent to a correct prediction

(Grunwald Section Abstract; Section 1, paragraphs 2-3; Section 3, paragraphs 2 and 4-5; Section

3.1, paragraphs 1 and 4; Section 3.2.1, paragraph 1; Section 3.3; Section 3.3.1, paragraphs 1 and

5; and Figure 2).

12.   Referring to claim 6, Grunwald has taught the apparatus of claim 4, wherein said

confidence count to decrement on an incorrect prediction (Grunwald Section Abstract; Section 1,

paragraphs 2-3; Section 3, paragraphs 2 and 4-5; Section 3.1, paragraphs 1 and 4; Section 3.2.1,

paragraph 1; Section 3.3; Section 3.3.1, paragraphs 1 and 5; and Figure 2).

13.   Referring to claims 7, 22, and 43, taking claim 7 as exemplary, Grunwald has taught the

apparatus of claim 4, wherein said confidence count to clear on an incorrect prediction

(Grunwald Section Abstract; Section 1, paragraphs 2-3; Section 3, paragraphs 2 and 4-5; Section

3.1, paragraphs 1 and 4; Section 3.2.1, paragraph 1; Section 3.3; Section 3.3.1, paragraphs 1 and

5; and Figure 2). Claims 22 and 43 have similar limitations and are rejected for the same

reasons.

14.   Referring to claim 8, Grunwald has taught the apparatus of claim 4, wherein said

confidence count to form a confidence value signal by utilizing a threshold (Grunwald Section

Abstract; Section 1, paragraphs 2-3; Section 3, paragraphs 2 and 4-5; Section 3.1, paragraphs 1

and 4; Section 3.2.1, paragraph 1; Section 3.3; Section 3.3.1, paragraphs 1 and 5; and Figure 2).

15.   Referring to claims 9, 21, and 42, taking claim 9 as exemplary, Grunwald has taught the

apparatus of claim 7, wherein said confidence value signal to update said global confidence

history (Grunwald Section Abstract; Section 1, paragraphs 2-3; Section 3, paragraphs 2 and 4-5;

Section 3.1, paragraphs 1 and 4; Section 3.2.1, paragraph 1; Section 3.3; Section 3.3.1,

paragraphs 1 and 5; and Figure 2). Claims 21 and 42 have similar limitations to claim 7 and are

rejected for the same reasons.

16.   Referring to claim 10, Grunwald has taught the apparatus of claim 7, further comprising a

second pattern history table to retrieve a predicted value (Grunwald Section Abstract; Section 1,

paragraphs 2-3; Section 3, paragraphs 2 and 4-5; Section 3.1, paragraphs 1 and 4; Section 3.2.1,

paragraph 1; Section 3.3; Section 3.3.1, paragraphs 1 and 5; and Figure 2).

17.   Referring to claim 11, Grunwald has taught the apparatus of claim 10, wherein said

confidence value signal to mask said predicted value (Grunwald Section Abstract; Section 1,

paragraphs 2-3; Section 3, paragraphs 2 and 4-5; Section 3.1, paragraphs 1 and 4; Section 3.2.1,

paragraph 1; Section 3.3; Section 3.3.1, paragraphs 1 and 5; and Figure 2).

18.   Referring to claim 12, Grunwald has taught the apparatus of claim 11, wherein said

apparatus to issue a predicted value signal including combinations predicted true and confident,

predicted false and confident, and not confident (Grunwald Section 3.3.1, paragraphs 1-5).

19.   Referring to claims 19 and 40, taking claim 19 as exemplary, Grunwald has taught the

method of claim 18, further comprising comparing said confidence count to a threshold

(Grunwald Section Abstract; Section 1, paragraphs 2-3; Section 3, paragraphs 2 and 4-5; Section

3.1, paragraphs 1 and 4; Section 3.2.1, paragraph 1; Section 3.3; Section 3.3.1, paragraphs 1 and

5; and Figure 2). Claim 40 has similar limitations to claim 19 and is rejected for the same

reasons.

20.   Referring to claims 20 and 41, taking claim 20 as exemplary, Grunwald has taught the

method of claim 19, further comprising issuing a confidence value responsive to said comparing.

(Grunwald Section Abstract; Section 1, paragraphs 2-3; Section 3, paragraphs 2 and 4-5; Section

3.1, paragraphs 1 and 4; Section 3.2.1, paragraph 1; Section 3.3; Section 3.3.1, paragraphs 1 and

5; and Figure 2). Claim 41 has similar limitations to claim 40 and is rejected for the same

reasons.

Claim Rejections - 35 USC § 103

21.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

22.   Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dirk

Grunwald, Artur Klauser, Srilatha Manne, and Andrew Pleszkun's "Confidence Estimation for

Speculation Control" IEEE ©1998 (herein referred to as Grunwald) as applied to claim 1

respectively above, and further in view of McFarling et al., U.S. Patent Number 5,758,142

(herein referred to as McFarling). Grunwald has not taught

    a.   The apparatus of claim 1, wherein said first circuit and said second circuit are

        speculative registers (Applicant's claim 13).

    b.   The apparatus of claim 13, further comprising a third circuit to store an

        architectural global confidence history, and a fourth circuit to store an

        architectural global prediction value history, wherein said third circuit to update

        said first circuit and said fourth circuit to update said second circuit (Applicant's

        claim 14).

23.   McFarling has taught

    a.   The apparatus of claim 1, wherein said first circuit and said second circuit are

        speculative registers (Applicant's claim 13) (McFarling column 4, lines 13-14 and

        30-35 and column 6, lines 7-8).

    b.   The apparatus of claim 13, further comprising a third circuit to store an

        architectural global confidence history, and a fourth circuit to store an

        architectural global prediction value history, wherein said third circuit to update

        said first circuit and said fourth circuit to update said second circuit (Applicant's

        claim 14) (McFarling column 5, line 55 to column 6, line 64; column 10, lines 23-

        55; Figure 1; Figure 2; and Figure 9).

24.   A person of ordinary skill in the art at the time the invention was made, and as taught by

McFarling, multiple branch predictor, like that of McFarling, provides better branch prediction

(McFarling column 3, lines 30-31), thereby improving instruction scheduling and processing

time (McFarling column 1, lines 36-49 and column 2, lines 5-10). Therefore, it would have been

obvious to a person of ordinary skill in the art at the time the invention was made to incorporate

the multiple branch predictors of McFarling in the device of Grunwald to improve instruction

scheduling and processing time.

25.   Claims 23-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dirk

Grunwald, Artur Klauser, Srilatha Manne, and Andrew Pleszkun's "Confidence Estimation for

Speculation Control" IEEE ©1998 (herein referred to as Grunwald) in view of Free On-Line

Dictionary of Computing (herein referred to as FOLDOC).

26.   Referring to claim 23, Grunwald has taught a system, comprising a processor including a

first circuit to store a global confidence history (Grunwald Section Abstract; Section 1,

paragraphs 2-3; Section 3, paragraphs 2 and 4-5; Section 3.2.1, paragraph 1; Section 3.3; Section

3.3.1, paragraph 1; and Figure 2), a first index function to produce a first index signal from said

global confidence history (Grunwald Section Abstract; Section 1, paragraphs 2-3; Section 3,

paragraphs 2 and 4-5; Section 3.2.1, paragraph 1; Section 3.3; Section 3.3.1, paragraph 1; and

Figure 2), and a first pattern history table to retrieve a value responsive to said first index signal

(Grunwald Section Abstract; Section 1, paragraphs 2-3; Section 3, paragraphs 2 and 4-5; Section

3.1, paragraphs 1 and 4; Section 3.2.1, paragraph 1; Section 3.3; Section 3.3.1, paragraphs 1 and

5; and Figure 2). Grunwald has not taught

        a.   An interface to couple said processor to an input/ output circuit; and

      b.   An audio input/output circuit.

27.   FOLDOC has taught

      a.   An interface to couple said processor to an input/ output circuit (FOLDOC

            "computer" ©1995); and

      b.   An audio input/output circuit (FOLDOC "audio" ©1999).

28.   In regards to FOLDOC, "computer" has taught that "I/O devices allow the computer to

communicate with the user and the outside world", which includes audio that produces sound. A

person of ordinary skill in the art at the time the invention was made, and as taught by FOLDOC,

would have recognized that I/O circuits, which include audio, "allow the computer to

communicate with the user and the outside world" (FOLDOC "computer" ©1995), thereby ·

allowing the user and outside world to monitor the computer's functions and results. Therefore,

it would have been obvious to a person of ordinary skill in the art at the time the invention was

made to incorporate the I/O devices of FOLDOC in the device of Grunwald to allow the user and

outside world to monitor the computer's functions and results.

29.   Referring to claim 24, Grunwald has taught the apparatus of claim 23, wherein said first

index function to use an instruction pointer signal (Grunwald Section Abstract; Section 1,

paragraphs 2-3; Section 3, paragraphs 2 and 4-5; Section 3.1, paragraphs 1 and 4; Section 3.2.1,

paragraph 1; Section 3.3; Section 3.3.1, paragraphs 1 and 5; and Figure 2).

30.   Referring to claim 25, Grunwald has taught the apparatus of claim 24, wherein said first

index function to use said global prediction value history (Grunwald Section Abstract; Section 1,

paragraphs 2-3; Section 3, paragraphs 2 and 4-5; Section 3.1, paragraphs 1 and 4; Section 3.2.1,

paragraph 1; Section 3.3; Section 3.3.1, paragraphs 1 and 5; and Figure 2).

31.   Referring to claim 26, Grunwald has taught the apparatus of claim 23, wherein said first

pattern history table to store a confidence count (Grunwald Section Abstract; Section 1,

paragraphs 2-3; Section 3, paragraphs 2 and 4-5; Section 3.1, paragraphs 1 and 4; Section 3.2.1,

paragraph 1; Section 3.3; Section 3.3.1, paragraphs 1 and 5; and Figure 2). Claims 18 and 39

have similar limitations as claim 4 and are rejected for the same reasons.

32.   Referring to claim 27, Grunwald has taught the apparatus of claim 26, wherein said

confidence count to increment subsequent to a correct prediction (Grunwald Section Abstract;

Section 1, paragraphs 2-3; Section 3, paragraphs 2 and 4-5; Section 3.1, paragraphs 1 and 4;

Section 3.2.1, paragraph 1; Section 3.3; Section 3.3.1, paragraphs 1 and 5; and Figure 2).

33.   Referring to claim 28 Grunwald has taught the apparatus of claim 26, wherein said

confidence count to clear on an incorrect prediction (Grunwald Section Abstract; Section 1,

paragraphs 2-3; Section 3, paragraphs 2 and 4-5; Section 3.1, paragraphs 1 and 4; Section 3.2.1,

paragraph 1; Section 3.3; Section 3.3.1, paragraphs 1 and 5; and Figure 2).

34.   Referring to claim 29, Grunwald has taught the apparatus of claim 26, wherein said

confidence count to form a confidence value signal by utilizing a threshold (Grunwald Section

Abstract; Section 1, paragraphs 2-3; Section 3, paragraphs 2 and 4-5; Section 3.1, paragraphs 1

and 4; Section 3.2.1, paragraph 1; Section 3.3; Section 3.3.1, paragraphs 1 and 5; and Figure 2).

35.   Referring to claim 30, Grunwald has taught the apparatus of claim 29, wherein said

confidence value signal to update said global confidence history (Grunwald Section Abstract;

Section 1, paragraphs 2-3; Section 3, paragraphs 2 and 4-5; Section 3.1, paragraphs 1 and 4;

Section 3.2.1, paragraph 1; Section 3.3; Section 3.3.1, paragraphs 1 and 5; and Figure 2).

36. Referring to claim 31, Grunwald has taught the apparatus of claim 26, further comprising a second pattern history table to retrieve a predicted value (Grunwald Section Abstract; Section 1, paragraphs 2-3; Section 3, paragraphs 2 and 4-5; Section 3.1, paragraphs 1 and 4; Section 3.2.1, paragraph 1; Section 3.3; Section 3.3.1, paragraphs 1 and 5; and Figure 2).

37. Referring to claim 32, Grunwald has taught the apparatus of claim 26, wherein said confidence value signal to mask said predicted value (Grunwald Section Abstract; Section 1, paragraphs 2-3; Section 3, paragraphs 2 and 4-5; Section 3.1, paragraphs 1 and 4; Section 3.2.1, paragraph 1; Section 3.3; Section 3.3.1, paragraphs 1 and 5; and Figure 2). In regards to Grunwald, Grunwald has taught that the confidence value is used to determine whether to use a predicted value or not (Grunwald Section Abstract; Section 1, paragraphs 2-3; Section 3, paragraphs 2 and 4-5; Section 3.1, paragraphs 1 and 4; Section 3.2.1, paragraph 1; Section 3.3; Section 3.3.1, paragraphs 1 and 5; and Figure 2) and a "mask" in computer science is "A pattern of characters, bits, or bytes used to control the elimination or retention of another pattern of characters, bits, or bytes (www.dictionary.com "mask" ©2000)."

38. Referring to claim 33, Grunwald has taught the apparatus of claim 32, wherein said apparatus to issue a predicted value signal including combinations predicted true and confident, predicted false and confident, and not confident (Grunwald Section 3.3.1, paragraphs 1-5).

39. Claims 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dirk Grunwald, Artur Klauser, Srilatha Manne, and Andrew Pleszkun's "Confidence Estimation for Speculation Control" IEEE ©1998 (herein referred to as Grunwald) in view of Free On-Line Dictionary of Computing (herein referred to as FOLDOC) as applied to claim 23 above, and

further in view of McFarling et al., U.S. Patent Number 5,758,142 (herein referred to as

McFarling). Grunwald has not taught

    a.   The apparatus of claim 23, wherein said first circuit is a speculative register

           (Applicant's claim 34).

    b.   The apparatus of claim 34, further comprising a third circuit to store an

           architectural global confidence history, and a fourth circuit to store an

           architectural global prediction value history, wherein said third circuit to update

           said first circuit and said fourth circuit to update said second circuit (Applicant's

           claim 35).

40.   McFarling has taught

    a.   The apparatus of claim 23, wherein said first circuit is a speculative register

           (Applicant's claim 34) (McFarling column 4, lines 13-14 and 30-35 and column

           6, lines 7-8).

    b.   The apparatus of claim 34, further comprising a third circuit to store an

           architectural global confidence history, and a fourth circuit to store an

           architectural global prediction value history, wherein said third circuit to update

           said first circuit and said fourth circuit to update said second circuit (Applicant's

           claim 35) (McFarling column 5, line 55 to column 6, line 64; column 10, lines 23-

           55; Figure 1; Figure 2; and Figure 9).

41.   A person of ordinary skill in the art at the time the invention was made, and as taught by

McFarling, multiple branch predictor, like that of McFarling, provides better branch prediction

(McFarling column 3, lines 30-31), thereby improving instruction scheduling and processing

time (McFarling column 1, lines 36-49 and column 2, lines 5-10). Therefore, it would have been

obvious to a person of ordinary skill in the art at the time the invention was made to incorporate

the multiple branch predictors of McFarling in the device of Grunwald to improve instruction

scheduling and processing time.

Response to Arguments

42.   Examiner withdraws objections to the drawings in favor of the replacement drawings.

43.   Examiner withdraws objections to the specification in favor of the amended specification.

44.   Examiner withdraws the rejection to claim 34 under 35 U.S.C. § 112, second paragraph,

in favor of the amended claim 34.

45.   Applicant's arguments filed 28 August 2006 have been fully considered but they are not

persuasive.

46.   Applicant's argue in essence on pages 11 and 12

> Thus, Grunwald merely discloses the confidence estimator that has the index
>
> computed using the history of branch prediction. In contrast, claim...refers to a
>
> first circuit to store <u>a global confidence history;</u> and <u>a first index function to</u>
>
> <u>produce a first index signal from the global confidence history.</u>

47.   This has not been found persuasive. As Grunwald describes on page 125, column 1,

paragraph 2, the JRS Estimator method that uses a counter table (MDC table) that tracks the

confidence of a branch prediction, similar to how a Gshare predictor operates. Grunwald teaches

that, when a branch is resolved, the corresponding confidence counter is either incremented or

the value is reset to zero. In essence, these confidence counters track whether past branch

predictions were correct or not, i.e. a global confidence history.   Also, Grunwald teaches that

the confidence counters output a value that is compared to a threshold to determine whether the

branch prediction has a high confidence or low confidence, i.e. an index is created. As can be

seen in Grunwald's Figure 2, the branch prediction is output based upon whether the confidence

is low or high.

48.   Applicant's argue in essence on pages 12-14

> ...It would be impermissible hindsight, based on Applicant's own disclosure, to
>
> combine Grunwald and McFarling.
>
> ...
>
> ...It would be impermissible hindsight, base on Applicant's own disclosure, to
>
> combine Grunwald and FOLDOC.
>
> ...
>
> ...It would be impermissible hindsight, based on Applicant's own disclosure, to
>
> combine Grunwald, McFarling, and FOLDOC.

49.   This has not been found persuasive. This has not been found persuasive. Grunwald

discloses that the McFarling branch predictor was used on page 125, column 2, paragraph 1.

McFarling et al., U.S. Patent Number 5,758,142 is the patent version of the McFarling paper

referenced by the paper. Grunwald does not disclose the details of McFarling's branch

prediction mechanism, however, McFarling's patent does disclose the details. A person of

ordinary skill in the art at the time the invention was made would have recognized that the use of

McFarling's branch predictor provides better branch prediction (McFarling column 3, lines 30-

31), thereby improving instruction scheduling and processing time (McFarling column 1, lines

36-49 and column 2, lines 5-10). Grunwald discloses that its scheme is part of the improvements

to modern processors, which are typically used in a computer type machine. FOLDOC teaches

the details not disclosed in Grunwald with regards to other elements besides a processor, i.e.

CPU, in a computer type machine. A person of ordinary skill in the art at the time the invention

was made, and as taught by FOLDOC, would have recognized that I/O circuits, which include

audio, "allow the computer to communicate with the user and the outside world" (FOLDOC

"computer" ©1995), thereby allowing the user and outside world to monitor the computer's

functions and results.

50.   In response to applicant's argument that the examiner's conclusion of obviousness is

based upon improper hindsight reasoning, it must be recognized that any judgment on

obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so

long as it takes into account only knowledge which was within the level of ordinary skill at the

time the claimed invention was made, and does not include knowledge gleaned only from the

applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392,

170 USPQ 209 (CCPA 1971).

Conclusion

51.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

52.   A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

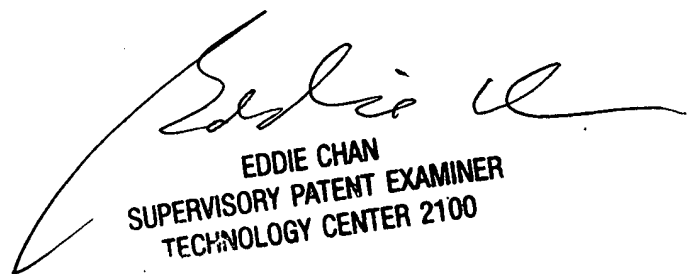will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

53.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Aimee J. Li whose telephone number is (571) 272-4169. The

examiner can normally be reached on M-T 7:30am-5:00pm.

54.   If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Eddie Chan can be reached on (571) 272-4162. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

55.   Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AJL
Aimee J. Li
08 November 2006

EDDIE CHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100